

Application No.: 09/622,931

Docket No.: 21581-00210-US

REMARKS

Claims 1-3, 5, 8-10, 12-17 and 19-34 are now in the application. The recent telephonic interview so courteously granted by the Examiner is hereby noted with appreciation. Claim 32 has been amended to correct an apparent clerical error for purposes of clarification and not to limit its scope.

Claims 1-3, 5, 8-10, 12-17, 19-23 and 30-34 were rejected under 35 U.S.C. 102(b) as being anticipated by or obvious under 35 U.S.C. 103(a) over U.S. Patent 5,807,937 to Matyaszeewski et al. (hereinafter also referred to as "Matyaszeewski"). Matyaszeewski fails to anticipate and fails to render obvious the above claims since, among other things, Matyaszeewski does not suggest a vinyl polymer having at least one terminal group of the formula $-\text{CO}(\text{O})\text{CR}=\text{CH}_2$.

In particular, the present invention according to claim 1 is directed to a vinyl polymer having at least one terminal group of formula (1); $-\text{OC}(\text{O})\text{C}(\text{R})=\text{CH}_2$.

That is, the claimed vinyl polymer has a terminal group of $-\text{OC}(\text{O})\text{C}(\text{R})=\text{CH}_2$.

Page 3, lines 1-3 of the Office Action states as follows: "It is taught by Matyaszeewski that one can select an initiator that provide the same structure as a repeating polymer unit, by citing lines 65-67 in col. 38." However, as discussed during the telephonic interview, Matyaszeewski does not disclose what type of initiator can succeed in providing a vinyl polymer with a terminal group of $-\text{OC}(\text{O})\text{C}(\text{R})=\text{CH}_2$, and from the suggestions in Matyaszeewski that such is not obvious. For instance, assuming that an acryloyl group-containing compound is used as the initiator, together with an acrylate monomer, the claimed vinyl polymer having a terminal group of $-\text{OC}(\text{O})\text{C}(\text{R})=\text{CH}_2$ cannot be obtained.

If the acryloyl group-containing compound is used as the initiator for carrying out the suggested atom transfer radical polymerization, the acryloyl group in the initiator will be completely consumed during the polymerization and thus no carbon-carbon double bonds from the acryloyl group remain in the product. This is because the acryloyl group is highly reactive in the atom transfer radical polymerization. Thus, the resulting polymer cannot retain an acryloyl group derived from the initiator.

Further, Matyaszeewski fails to enable a skilled person to obtain the claimed polymer having a terminal group of $-\text{OC}(\text{O})\text{C}(\text{R})=\text{CH}_2$ by selecting an initiator that provides the same

Application No.: 09/622,931

Docket No.: 21581-00210-US

structure as a repeating polymer unit. Therefore, the general description indicated below of Matyaszeewski would not render the claimed polymer obvious. As discussed during the telephonic interview, the Examiner's attention is kindly directed to page 25 et seq. wherein the various techniques for providing the claimed functional groups is disclosed.

In addition, page 3, lines 7-10 of the Office Action, states as follows: "Matyaszeewski discloses a variety of suitable polymers, ..., terminated by a variety of functional groups, including acryloyl groups, as can be derived from the meaning of X explained through the whole body of a patent." Contrary to this statement, however, as mentioned during the telephonic interview, Matyaszeewski does not disclose the claimed group of $-\text{OC}(\text{O})\text{C}(\text{R})=\text{CH}_2$ in the definition of X. On col. 17, lines 23-32, X is defined, in which the claimed group of $-\text{OC}(\text{O})\text{C}(\text{R})=\text{CH}_2$ is not mentioned at all.

The " $\text{OC}(=\text{O})\text{R}^{14}$ " group on col. 17, line 24 differs significantly from the claimed group of $-\text{OC}(\text{O})\text{C}(\text{R})=\text{CH}_2$ because the group R^{14} is clearly defined as aryl or a straight or branched C1-C20 alkyl group (see col. 16, lines 27-28). Persons skilled in the art would not interpret the aryl or alkyl group as meaning a vinyl group.

Thus, it is clear that the claimed group of $-\text{OC}(\text{O})\text{C}(\text{R})=\text{CH}_2$ does not fall within the range of the disclosed " $\text{OC}(=\text{O})\text{R}^{14}$ ".

Further, even assuming arguendo, that R^{14} represents a vinyl group, the claimed vinyl polymer having a group of $-\text{OC}(\text{O})\text{C}(\text{R})=\text{CH}_2$ would still not be obtained because X on col. 17 is disclosed as part of initiator, and such initiator having the assumed $\text{OC}(=\text{O})\text{R}^{14}$ group will be completely consumed during the polymerization reaction. Therefore no carbon-carbon double bonds in the vinyl group remain in the product as explained above and mentioned during the telephonic interview.

Furthermore, page 3, lines 12-15 of the Office Action, states as follows: "It is further taught by Matyaszeewski that the end functionality of polymers can be easily converted to other functional groups, and initially containing CO_2R group is identified as an initial functional group."

The CO_2R group is described on col. 39, line 17 of Matyaszeewski. Further Matyaszeewski states on col. 39, lines 20-21 that CO_2R can be hydrolyzed to form a carboxylic acid, $-\text{CO}_2\text{H}$, by known processes.

Application No.: 09/622,931

Docket No.: 21581-00210-US

From this description of the formation of a carboxylic acid, it is apparent to those skilled in the art that the CO_2R group means $-\text{C}(=\text{O})-\text{O}-\text{R}$. Thus, the ester group in the CO_2R group is in the opposite direction from that in the claimed group of $-\text{O}-\text{C}(\text{O})\text{C}(\text{R})=\text{CH}_2$.

In this context, it is clear that Matyaszeewski does not disclose the group of $-\text{OC}(\text{O})\text{C}(\text{R})=\text{CH}_2$.

Page 3, lines 16-18 of the Office Action, states as follows: "the end functionality of the copolymers of Matyaszeewsk can be easily converted to other functional groups."

Matyaszeewski merely describes that the end functionality of the copolymers of Matyaszeewski can be easily converted to "other functional groups", and exemplified OH , NH_2 , a carboxylic acid, a carboxylic acid halide as said "other functional groups". Contrary to this statement, Matyaszeewski does not describe the end functionality of the copolymers of Matyaszeewski can be converted to acryloyl groups. On the other hand, the present specification clearly discloses how to achieve the claimed polymers including acryloyl groups by any conventional and known methods, by citing col. 39, lines 15-25 (see page 25 et seq. of the specification).

Page 3, the last line to page 4, line 7 of the Office Action states as follows: "When the reference teaches a small genus which places a claimed species in the possession of the public, the species would be obvious even if the genus were not sufficiently small to justify a rejection under 35 U.S.C. 102. Therefore, the generic teaching of polymers, having end functional group as discussed above necessarily indicates, that any acryloyl functional group containing polymer, having recurring acrylate monomer units would have been operable within the scope of Patentees invention. Therefore, it would have been obvious to a skilled artisan at the time the invention was made to arrive at the claimed subject matter, because it appears that the claimed subject matter, because it appears that the claimed subject matter is within the scope generic teaching of Matyaszeewski."

However, Matyaszeewski does not teach a small genus which places a claimed species in the possession of the public. The genus allowed to by Matyaszeewski is only "other functional groups". The claimed group of $-\text{OC}(\text{O})\text{C}(\text{R})=\text{CH}_2$ is not anticipated by, or obvious over the description "other functional groups".

Application No.: 09/622,931

Docket No.: 21581-00210-US

Matyaszewski fails to anticipate the present invention. In particular, anticipation requires the disclosure, in a prior art reference, of each and every recitation as set forth in the claims. See *Titanium Metals Corp. v. Banner*, 227 USPQ 773 (Fed. Cir. 1985), *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 1 USPQ2d 1081 (Fed. Cir. 1986), and *Akzo N.V. v. U.S. International Trade Commissioner*, 1 USPQ2d 1241 (Fed. Cir. 1986).

There must be no difference between the claimed invention and reference disclosure for an anticipation rejection under 35 U.S.C. 102. See *Scripps Clinic and Research Foundation v. Genetech, Inc.*, 18 USPQ2d 1001 (Fed. Cir. 1991) and *Studiengesellschaft Kohle GmbH v. Dart Industries*, 220 USPQ 841 (Fed. Cir. 1984).

To the extent that the Examiner is relying upon inherency, this is improper. Inherency requires that the recited results or structure must necessarily be obtained not merely that it might be achieved. See *Electra Medical Systems S.A. v. Cooper Life Sciences, Inc.*, 32 USPQ2d 1017 (Fed. Cir. 1994); *In re Oelrich*, 212 USPQ 323 (CCPA 1981) and *In re Robertson*, 49 USPQ2d 1949 (Fed. Cir. 1999).

Matyaszewski does not render unpatentable the present invention since the disclosure therein as discussed above, fails to enable persons skilled in the art to make the claimed polymers. See *Minnesota Mining & Mfg. Co. v. Chemque, Inc.* 64 USPQ 2d 1270 (Fed. Cir. 2002).

Claims 24-29 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matyaszewski in view of U.S. Patent 5,381,735 to Fifield.

The cited reference fails to render obvious claims 24-29. Fifield was merely relied upon for a disclosure of photopolymerizable compositions comprising a photopolymerizable material having ethylentically unsaturated bonds available for participation in addition (free radical) polymerization.

Fifield fails to overcome the above discussed deficiencies of Matyaszewski with respect to rendering unpatentable the present invention. Accordingly, claims 24-29 are not patentable for at least those reasons as to why claim 1 is patentable.

In view of the above, consideration and allowance are, therefore, respectfully solicited.

Application No.: 09/622,931

Docket No.: 21581-00210-US

In the event that the Examiner believes an interview might serve to advance the prosecution of this application in any way, the undersigned attorney is available at the telephone number noted below.

The Commissioner is hereby authorized to charge any fees or credit any overpayment associated with this communication including any extension fees to Deposit Account No. 22-0185.

Dated: 12-27-04

Respectfully submitted,

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